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THE IMPORTANCE OF HONEY PRODUCTION.

E. R. ROOT.

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THE IMPORTANCE OF HONEY PRODUCTION.

E. R. ROOT, MEDINA, OHIO.

Last August I stood on the Brooklyn docks, New York, and saw 2,000 tons of honey — a whole shipload — going to Europe. Two thousand tons! It seems like a large amount. To the uninitiated it might look as if that were more than the production of the entire United States. As a matter of fact, this one shipload of honey was only one of several, how many, I do not know. It has been estimated that the entire annual production of honey in the United States is somewhere between 200,000,000 and 300,000,000 pounds,¹ or seventy-five times as much as what I saw on the docks representing one shipload. In dollars and cents the annual production of honey for the United States at present prices would amount to between \$40,000,000 and \$60,000,000.

There are several large factories engaged in the manufacture of beekeepers' supplies, one of which has an investment of over \$1,000,000. There are thousands of beekeepers who are producing honey by the carload in the United States. These large producers are located mainly in the western States; California will produce 500 cars of honey, Colorado and Texas will produce nearly as much. While honey is produced largely in the eastern States, it is on account of the greater population consumed locally.

The question may be raised, "What is Europe doing with so much honey that she requires it in shipload quantities?" The answer is easy. Sugar is scarce. Where it can be bought at all it is bringing over there all the way from 60 to 70 cents, and even \$1 a pound. The immense sugar beet fields of

¹ This, loaded on freight cars, would make one solid train 100 miles long.

Europe have been devoted to growing grain crops. Germany has practically no sugar; and her common people, at least, have to depend on saccharine, — something that has absolutely no food value, but, on the contrary, is regarded as a cumulative poison.

There is likewise a scarcity of sugar among the allies, notwithstanding that five times as much has been shipped from the United States and the West Indies to Europe as was shipped before the war.

The only other substitute for sugar that has any food value is honey. Not enough honey is produced to supply the shortage of sugar, either in the United States or in Europe. Unlike sugar, honey, up until recently, could be bought in any quantity provided one had the price. When the war started in, in 1914, prices on honey began to sag. The very finest liquid clover honey could be had in car lots at $5\frac{1}{2}$ cents, and some of the southern grades were begging for customers at $1\frac{1}{4}$ and 2 cents a pound. To-day the best table extracted clover and alfalfa, and mountain sage, is bringing 20 cents in car lots, where it can be had at all, and there is a probability of its advancing higher before the next crop is ready. This means that the average farmer or back lot beekeeper owning a few bees can get in a retail way from 25 to 30 cents for extracted honey, and from 40 to 50 cents a pound for his comb honey. This is on the supposition that he knows the market and does not give his honey away at the old prices that prevailed during peace times.

There never was a time in the history of the world when there was a greater demand for sugar and honey than now. Except in limited localities the average farmer cannot grow the sugar beet; but every farmer can keep bees anywhere in the United States. It becomes, therefore, a patriotic duty on the part of every citizen, whether he owns a farm or whether he has a back lot where he can keep a few bees, to help make up for the sugar shortage by producing honey. No matter what we hear about the sugar shortage being relieved, it is as sure as fate that sugar will be scarce; for the vast quantities that are being shipped to Europe, where prices are higher than here, will make the commodity scarce in this country, and of course will create a strong demand for honey.

But there are other forms of sugar besides those found in the sugar cane and the nectaries of flowers from which the bees gather their sweets. The sugar in fruits is in the best form possible for direct assimilation. Like honey, fruit sugar is more easily digested than cane or beet sugar. It likewise

becomes a patriotic duty of every citizen of the United States, whether he is a farmer or a backlotter, to grow all the fruit he can, as well as honey.

At this point it is pertinent to ask how the beekeeper can make more and better fruit. I do not need to say to some of the farmers facing me to-day that it is necessary both to spray and prune the trees in order to get the maximum of fruit. It is necessary to spray to kill the coddling moth and the San José scale. It is necessary to prune and prune so that fruit may be grown instead of firewood. In other words, the energies of the tree should be concentrated on the fruit and not on the wood. But that is not all. The little honeybees, which I have the honor to represent to-day, perform a most important part in pollinating fruit blossoms in early spring. What do I mean by pollinating? I mean this: There are certain plants and trees that need cross-fertilization the same as some of our live stock. That simply means this: That the pollen of one blossom must by some means — wind, rain or insects — be conveyed to the blossoms of another variety. A perfect flower has male and female organs. Some flowers have only the male and others only the female organs; and in many and most cases where both sexes are represented in the same blossom, a better fruitage is secured when the pollen of several varieties are mingled together.

Professor F. A. Waugh, one of the greatest authorities on fruit growing in the United States, and a professor at your Agricultural College at Amherst, has repeatedly made the statement that but little pollination is effected by means of wind and rain; that most of it is effected by insects, mainly the honeybees. There are certain legumes — the clovers (white, red, peavine, alsike and sweet) — that cannot develop seed without the agency of the bees. Experiment stations have shown everywhere that when limbs or whole trees of certain varieties of fruit are covered with mosquito netting before coming into bloom, but very little fruit will mature. The experiment is more striking when a single limb of a tree is covered with mosquito netting. Where the variety is sterile to its own pollen, only about 2 per cent of fruit will mature on the covered limb, while the rest of the tree will have the normal amount.

As there are very few insects flying in early spring except the bees, it is clear that the bees do practically all the work.

As many farmers within the reach of my voice have buckwheat or some of the clovers, and as many others are growing some fruit, a few specific instances that have come under my observation may not come amiss at this time to show how bees make more seed and more and better fruit.

In the vicinity of Glassboro, New Jersey, there are something like 5,000 acres of apple, peach and pear orchards. The fruit growers in that vicinity have learned that it pays them to give a bonus to the local beekeepers at the rate of \$5 a colony for putting bees in their orchards only during the time the trees are in bloom. Albert Repp (one of the most extensive growers in the vicinity) in the "Country Gentleman" about two years ago said: "I would no more think of trying to grow apples, peaches and pears without bees than I would think of trying to get along without spraying or pruning."

South of Boston, cranberries are grown in a large way. When the cultivated bogs were small it was observed that good yields of the berries could be secured; but when the acreage had been increased the crop kept getting smaller and smaller per acre. It was finally discovered that there were too few bees in the vicinity of these large bogs. When enough bees were put around the bogs, the yield of cranberries became normal again.

There is a 50-acre apple orchard about 10 miles north of my home in Medina, Ohio. For years this orchard was neglected, and yielded scarcely 500 bushels per year. It finally came into the possession of a practical fruit grower. He began spraying and pruning, and then he said he wanted me to put some bees on his place. I did so, furnishing one colony to the acre. What were the results? The first year he secured 16,000 bushels of apples, all of them perfect. The next year he secured 12,000 bushels. Owing to the help of the bees he had from 5,000 bushels during the poorest year up to 16,000 during the best.

At a large cherry orchard just east of Medina, we put some bees. The spring of 1917 was quite chilly and backward. There was only an hour or two when the bees could fly during

the blooming period. The result was that during the summer only those trees that were in the immediate vicinity of the hives yielded a good crop; and those trees directly over the hives had the best yield. It had been so cold that the bees could fly only short distances in blooming time; from this it is very evident that the trees that the bees could reach were the only ones that had any fruit of any consequence.

In one of my western trips I learned that there was in the Pejario valley, near San José, a 15,000-acre apple orchard where it was said there were no bees, and no bees needed. This was news to me. I made an investigation and found bees in the vicinity, but probably not enough to pollinate the entire 15,000 acres. I called on the horticulturist, and asked him why he did not have more bees. His answer was somewhat significant. He said: "Mr. Root, the two varieties of apples we grow here are the Downing and the Belleflower. They are fertile to their own pollen and therefore we do not need any bees." Then he added: "If we were to put bees in the locality the trees would be broken down by the weight of the fruit. We have to hand-pick as it is, because so many apples start. If we put bees here, there would be too many apples."

Most of the varieties of apples, at least some of the finer ones, are either partially sterile to their own pollen or are entirely so. Where this occurs bees are needed to fertilize the blossoms. The result is that the fruit growers all over the United States are asking for bees. In many cases they are willing to pay a bonus to get the bees in their orchards. Bees are being shipped every spring from the southern States to the northern orchards to pollinate the fruit trees. Sometimes they come in car lots, and at other times they are sent in packages of 1, 2 and 3 pounds by express.

What is true of the northern fruit orchards is true to a lesser extent with the citrus orchards of the southland. Fewer bees are needed in an orange grove because the weather is warm and the period of blooming longer. In the northern orchards the work of pollinization must be done in a few hours, or at most in two or three days, hence more bees are required per acre.

Some twenty-five years ago I gave an address before the

American Pomological Society, Buffalo, on the subject of "Bees as Marriage Priests," and I then could plainly see that there was some opposition to the bees on the part of the fruit growers. To-day one can scarcely find an up-to-date grower who does not welcome bees — the more the better.

Coming back, then, to our original proposition of growing more sweets or more sugar it is plain to be seen that if bees produce something like \$50,000,000 worth of honey every year in the United States, they are actually contributing to the wealth of the country by making more and better fruit to the extent of possibly \$100,000,000 worth. Taking it all in all, the little bee is no small factor in contributing to the wealth of the country, and, what is more, helping us to win this war.

Perhaps it may be said, "Why all this furore about sugar?" The facts are, sugar is just as necessary for a balanced ration in the human family as meat, eggs, wheat, or any of the staple grains. Sugar is an energy producer. In our great cities the poor people are suffering for the want of sugar. They have a distinct craving for it. That is the reason why our soldier boys from the trenches are willing to pay at the canteens in France \$1.10 a pound for honey. Certainly nothing is more exhausting than trench work, and therefore it becomes the bounden duty — yes, the patriotic duty — of every citizen of the United States to help feed not only the soldiers but a hungry world by supplying one of the necessary food elements — sugar — in the form of honey or fruit juices. If you have ever deprived yourself for just thirty days of sugar, in all forms, such as cake, pies, pastry, candy, etc., you will find that you have a ravenous appetite for it. There is no doubt that in ordinary times we eat too much candy; but during this period of war we cannot get too much sugar in the form of honey or fruit.

Now I am coming down to the vital question: Ought the farmer or backlotter to keep bees, and, if so, can he? Most emphatically I say yes to both questions. Nay, more, — it is his patriotic duty. It is just as easy to keep a few hives of bees as it is to keep a few chickens. What one farmer has done, others can do. If there is going to be a shortage of sugar this year and next, then it is up to the beekeeper and

his family to raise their own sugar by keeping bees. Honey can be used in almost any way that sugar can. It can be used for sweetening coffee and tea, for canning fruit, for making cakes, and for making candy. Indeed, one of the large baking companies, I have been told, has been buying honey by the hundred-car lots. These concerns have discovered that a little honey used in connection with sugar makes a cake keep soft and moist. Without honey or invert sugar, they will become dry and unsalable. It is safe to say that practically all of the cakes and cookies in the groceries and in the bakeshops contain a little honey.

Now, then, if honey can be used in place of sugar, can the problem of swarming be handled by the farmer? Yes. There are textbooks now that show how this can be done. In your own State of Massachusetts, at the Agricultural College at Amherst, you have for teaching beekeeping one of the best schools on the entire continent. Indeed, Massachusetts leads off and stands in the very forefront in the instruction it is giving on bees. Any farmer's boy or daughter can take the course at the college.

The average colony of bees will cost somewhere about \$5. At the present prices of honey to-day, that colony, if a normal crop be secured, can bring back in value between 400 and 500 per cent. Indeed, I believe I am safe in saying there is nothing on the farm, for the money invested, not even the hog business, and that is going some, that will yield larger returns. When a \$5 investment in a fair year can bring back to its owner as much as \$25, show me something on the farm or back lot that will do better. The chicken business cannot do it, because the price of feed is nearly up to the price of the eggs. I have been told that a number are going out of the poultry business because the price of feed is so high. But in a fair season the bees find their own food, and then turn around and give the owner the surplus.

I do not wish to imply that there are no losses or failures with bees. Some winters they die; some seasons they have to be fed to keep them from starving. Some years they will not produce any surplus honey. But is there anything on the farm that does not fail some seasons?

To recapitulate: We can produce sugar on our farms and in our town and city back lots by keeping bees. We are advised by the United States Food Administration to keep a pig to help a starving world. It may look as if I were prompted by selfish motives when I say that the same money invested in bees will actually go further. A pig pen in a town is often and generally unsanitary. It is a breeder of flies and disease. A few hives of bees in every back lot and every farm are not only not objectionable from a sanitary point of view, but will actually save millions of dollars in sweets that are now going to waste in the fields because there are no bees to gather them. Dr. E. F. Phillips, bee expert in the Department of Agriculture, Washington, District of Columbia, says that at least ten times as much honey could be secured, where there are no bees, as there is now. In most localities there are few or no bees. It is our duty to supply sweets, and honey and fruit sugars are the most wholesome of them all.

